L2 Muon Interface Board Progress Report

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http://www-personal.engin.umich.edu/~mrniell/L2_progress/L2_progress.html

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L2 Muon Board Status

- No remaining Hardware issues identified
  - Second RevB Muon board to be built at Michican
    - SooBong, Peter, Greg will shepard
  - Need to repair current board
    - Testing killed some chips

- VME interface stable
  - 1 stuck bit
  - 0/100000 errors read, 0/100000 errors write
- MB interface developments
  - No stuck bits
  - ~1% error - state machine glitch

Hardware Functionality

- No remaining Hardware issues identified
  - 8/16 Hotlinks decode perfectly
- Buffer chip firmware in place
  - Both Verilog and Schematic forms
    - Verilog simulates correctly
    - Schematic simulates correctly
- Magic Bus appears clean
  - May cut two redundant traces eventually for noise
    - not a problem at this point -Stephen & Tom

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Firmware Development

- **Serial download to data phasing chips**
  - **~1bit errors (1 too many, 1 too few)**
    - **State machine glitch -Fred**
- **Magic Bus state machine**
  - **Occasionally (~1%) sends 2 words instead of one**
    - **State machine glitch -Tom**
- **Check PIO compatibility for MB**
  - **Already tested for VME (OK)**

Software Development

- **Composite triggers -Tom**
- **Muon matching -Tom (with help)**
- **Alpha trigger implementation -Stephen**
- **Muon board test/comissioning software**
  - **Copy existing -Stephen**
  - **Compare TL2D with muons at L2 (bottom crate)**

What remains?

- **Finish firmware low-level glitches**
  - **DP, MB**

- **Testing/Comissioning: Michigan tasks**
  - **Iron out HL data path through board**
    - **Fix any stuck bits, want 0 error rate**
  - **Run test comparing TL2D with muons at L2**
    - **Readout board every time, but no triggers**
    - **Stephen, Tom steal from existing code**
  - **Develop useful trigger executable for Alpha**
    - **muon matching, MB PIO, etc.**
    - **Stephen**

What remains? (2)

- 2nd Board at FNAL
  - SooBong, Greg, Peter do bottom crate tests

- Testing/Comissioning: FNAL tasks
  - Run in bottom crate to validate muon matchbox data
    - Comparing TL2D with muons at L2 for lower crate
    - No beam, with beam
  - Test simple trigger in lower crate w/o beam
  - Test simple trigger with beam

Time Scale

- **Firmware bugs**
  - **~1 Week?**
    - **Tom and I want it finished as much as you do**
- **Composite triggers**
  - **This week -Tom**
- **Muon Matching**
  - **Week or two -Tom, Peter, whoever else Tom asks for**
- **Alpha executables**
  - **Stephen and Tom**
- **FNAL tests:**
  - **Bottom crate muon MB: ready probably 2 weeks**
  - **Simple trigger: probably 3 or more weeks**